MATHS

BOOKS - CALCUTTA BOOK HOUSE

MATHS (BENGALI ENGLISH)

DISTANCE FORMULAS

Examples

1. Distance between the points (a+b, c-d) and (a-b, c+d) is

A. $2\sqrt{a^2+c^2}$

B. $2\sqrt{b^2+d^2}$

C. $\sqrt{a^2+c^2}$

D. $\sqrt{b^2+d^2}$

Answer: B::D

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2. The distance between the points (x,-7) and (3,-3) is 5 units. Then the values of x are

A. 0 or 6

B. 2 or 3

C. 5 or 1

D. -6 or 0

Answer:

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3. if the distance of the points (x,4) from the origin be 5 units, then the value of x is

A. $-+4$

B. $-+5$

C. $-+3$

D. None of these

Answer: C

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4. The coordinates of the centre of a circle are (0,0). If the coordinates of any point on its

circumference be (3,4) then the radius of the circle is

A. 5 units

B. 4 units

C. 3 units

D. None of these

Answer:

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5. The distance of the points (a+b, a-b) from the origin is

A. $2\sqrt{a^2 - b^2}$

B. $2\sqrt{a^2 + b^2}$

C. $\sqrt{a^2 + b^2}$

D. $\sqrt{2(a^2 + b^2)}$

Answer: A::B

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Examples Short Answer Type Question

1. Find the point on the y-axis which is equidistant from the points (2,3) and (-1,2).

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2. The square of the distance between the points (-2,a) and (a,-3) is 85 , find a .

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3. Show that the distance between (1,1) and $\left(\frac{2m^2}{1+m^2}, \frac{(1-m)^2}{1+m^2}\right)$ is independent of m.

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4. The coordinates of one of the vertices of a triangle is (2,0) and the coordinates of the mid-points of its opposite side is (5,3) . Find the length of the median.

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Examples Long Answer Type Question

1. Prove that A(3,3) B (8,-2) and C(-2,-2) are the vertices of a right - angled isosceles triangle . Also, find the length of the hypotenuse of $\triangle (ABC)$

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2. Show that the points (2,1) (0,0) (-1,2) and (1,3) are the vertices of a square.

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3. Calculate whether the three points O (0,0) A (4,3) and B(8,6) are collnear or not.

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4. Show that the successive joining of the points (-7,2) (19,8) (15,-6) and (-11, -12) produce a parallelogram.

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5. Show that the successive joining of the points (2,5) (5,9) (9,12) and (6,8) produce a rhombus.

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6. The line segment joining the points (7,-1) and (9,3) is the base of an isosceles triangle . If the abscissa of the triangle be 4, find the vertex.

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7. If the point (x,y) be equidistant from the points (a+b, b-a) and (a-b, a+b) then prove that bx=ay.

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8. Prove that the circle of centre (4,3) passes through the points (0,0) (8,0) (1,7) and (1,-1) . Find also the radius of the circle.

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9. The centre of a circle is (5,3) and its radius is 5 units. Determine the length of the chord of the circle, which is bisected at the point (3,2) .

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10. Prove that the points (2,2) (-2,-2) and $\left(-2\sqrt{3}, 2\sqrt{3}\right)$ are the vertices of an equllateral triangle.

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Exercise 1

1. The distance between the points (x,-y) and (-x,y) is

A. $\sqrt{2(x^2+y^2)}$

B. $\sqrt{x^2+y^2}$

C. $2\sqrt{x^2+y^2}$

D. None of these

Answer: C

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2. The distance between the points $\left(at_1^2, 2at_1\right)$ and $\left(at_2^2, 2at_2\right)$ is

A. $at_1 + t_2\sqrt{\left(t_1 + t_2\right)^2 + 4}$

B. $a(t_1 - t_2)\sqrt{\left(t_1 + t_2\right)^2 + 4}$

C. $a(t_1 - t_2)\sqrt{\left(t_1 - t_2\right)^2 + 4}$

D. None of these

Answer: B

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3. The centre of a circle is the origin and (-5,12) is a point on its circumfernce. Then the diameter of the circle is

A. 5 units

B. 13 units

C. 26 units

D. None of these

Answer: C

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4. The length of the hypotenuse of the right - angled triangle with vertices (7,9) (3,-7) and (-3,3) is

A. $\sqrt{272}$ units

B. $\sqrt{136}$ units

C. $\sqrt{276}$ units

D. None of these

Answer: A

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5. (2,1) and (0,0) are the two adjcent vertices of a square. Then then perimeter of the square is

A. 5 units

B. 20 units

C. $2\sqrt{5}$ units

D. $4\sqrt{5}$ units

Answer: D

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Short Answer Type Questions

1. Find the distance between the points (-13,-11) and (-2,-9)

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2. (3,-7) , (-2,4) are two adjacent vertices of a square. Find its area.

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3. The three vertices of a triangle are (3,0) (0,4) and (-8,-2) . Find the length of its largest side.

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4. Determine the area of the triangle produced by a straight line when it intersects the coordinate axes at (4,0) and (0,3) respectively.

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5. The ordinates of two points is 2 units. Find the coordinates of the points if they are located on the opposite directions of y-axis and are equidistant from the y-axis.

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Long Answer

1. If the distance between the points (7,3) and (2,y) be $\sqrt{41}$ units. Find y .

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2. Prove that successive joining of the points (7,9) (3,-7) and (-3,3) produce a right - angled isosceles triangle .

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3. If the points (x,y) is equidistant from (2,-1) and (-3,4) then prove that $y = x + 2$.

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4. Find the condition that the point (a,b) is equidistant from the points (8,4) and (-2,-4) .

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5. If the point (x,y) be equidistant from the points (10,0) (0,-10) and (-8,6) then prove that x =0 and y =0.

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6. Show that the points (2a, 6a) (2a,4a) and $\left(2a+\sqrt{3}a, 5a\right)$ are the vertices of an equilateral triangle of side 2a units.

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7. Prove that if the co-ordinates of A and B be (3,2) and (-6,-4) respectively, then the line AB passes through the origin.

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8. Prove that the points P(-1,-2) Q (7,4) R (4,8) and S(-4,2) are the vertices of a rectangle.

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9. Prove that the points A (-2,-1) , B (5,4) C (6,7) and D (-1,2) are the vertices of a parallelogram.

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10. A (2,0) B(4,4) and C (6,2) are the vetices of the $\triangle ABC$. The mid - points of $\overline{BC}, \overline{CA}$ and $\overline{AB}$ are D (5,3), E(4,1) and F(3,2) respectively. Then find the length of the three medians.

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11. Prove that the successive joining of the points (4,3) (5,6) and (3,5) produce a square.

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